CONCEPTS CREATE MOTION

Integrated Airport Logistics

independent engineer and airport logistics think-tank
innovator since 1987

Airport Development

January 2024

logplan

ReQ matic

AGENDA

- Introduction
- Logistics/ Proces Trends
- Workstations, Transport / Conveying Processes, Automation
- Three Cases
- Project Development
- Tendering
- Discussion

LOGPLAN EXPERTISE

THINK TANK

Domain BHS – Baggage Handling Systems

We've designed the most advanced and sustainable baggage handling systems in the world.

Domain APM – Automated People Movers

Our experience in automated people movers encompasses all stages of development and operation.

Domain ACS/ CHS – Air Cargo Systems

We're committed to engineer practical, cost-effective cargo solutions that deliver real world results.

Solving challenges related to the logistics and operations of airports.
By generating innovative ideas, research, and strategies to improve the **efficiency, safety, sustainability, and overall performance**

MUTIMODAL BIG PICTURE

AIR 2 AIR

AIR

AIR 2 SEA

SEA

AIR 2 ROAD

ROAD

AIR 2 RAIL

RAIL

PROCESS RELATED TRENDS

27,000 accidents/y

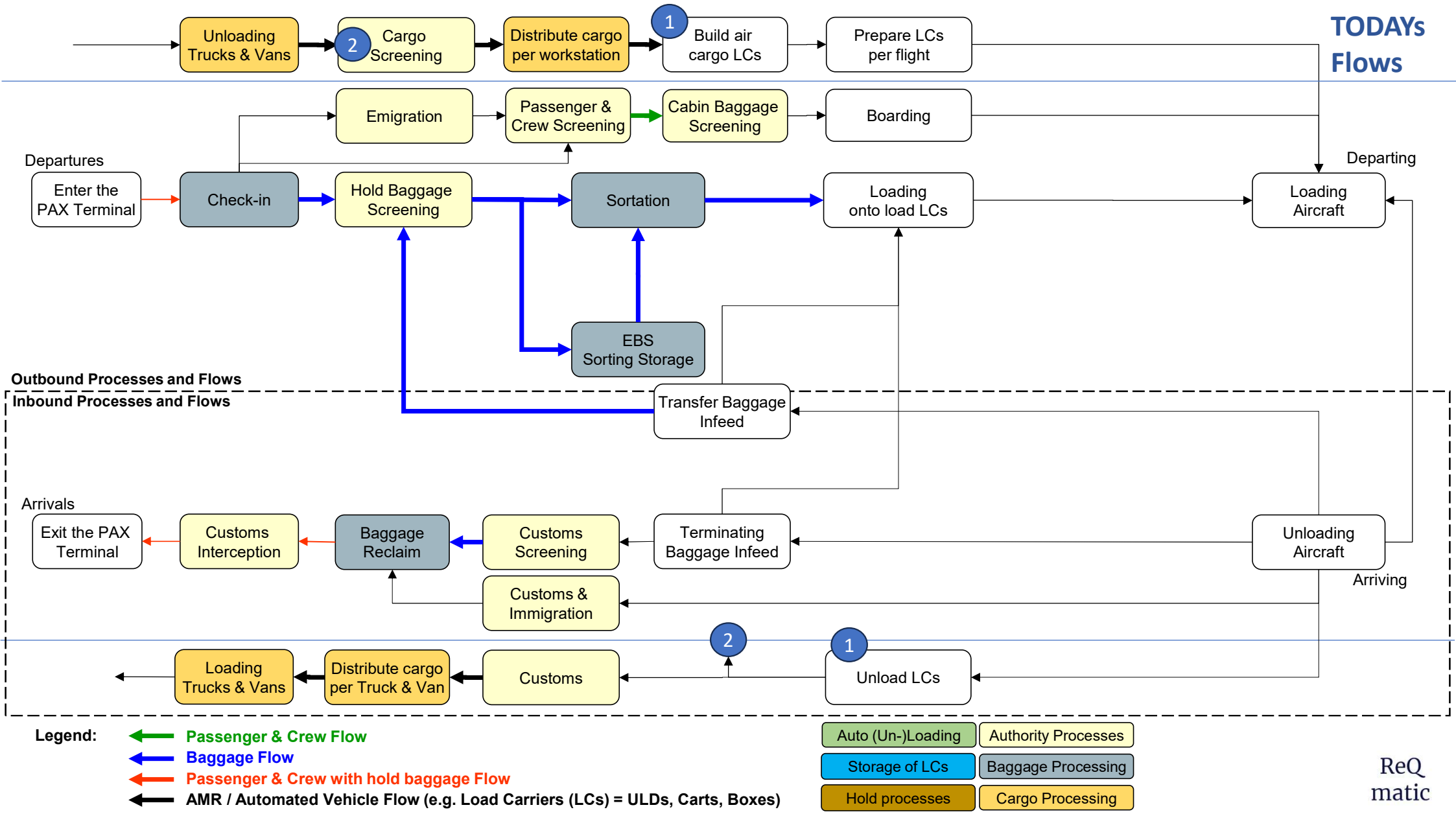
-

243,000 injured/y

-

Accidents costs: 9 B€/y

(source: IATA)


TODAYs Flows
Unloading Trucks & Vans
2
Cargo Screening
Distribute cargo per workstation
1
Build air cargo LCs
Prepare LCs per flight
Emigration
Passenger & Crew Screening
Cabin Baggage Screening
Boarding
Departures
Departing
Enter the PAX Terminal
Check-in
Hold Baggage Screening
Sortation
Loading onto load LCs
Loading Aircraft
EBS Sorting Storage
Outbound Processes and Flows
Inbound Processes and Flows
Transfer Baggage Infeed
Arrivals
Exit the PAX Terminal
Customs Interception
Baggage Reclaim
Customs Screening
Terminating Baggage Infeed
Unloading Aircraft
Arriving
Customs & Immigration
2
1
Loading Trucks & Vans
Distribute cargo per Truck & Van
Customs
Unload LCs
Legend:
Passenger & Crew Flow
Baggage Flow
Passenger & Crew with hold baggage Flow
AMR / Automated Vehicle Flow (e.g. Load Carriers (LCs) = ULDs, Carts, Boxes)
Auto (Un-)Loading
Authority Processes
Storage of LCs
Baggage Processing
Hold processes
Cargo Processing
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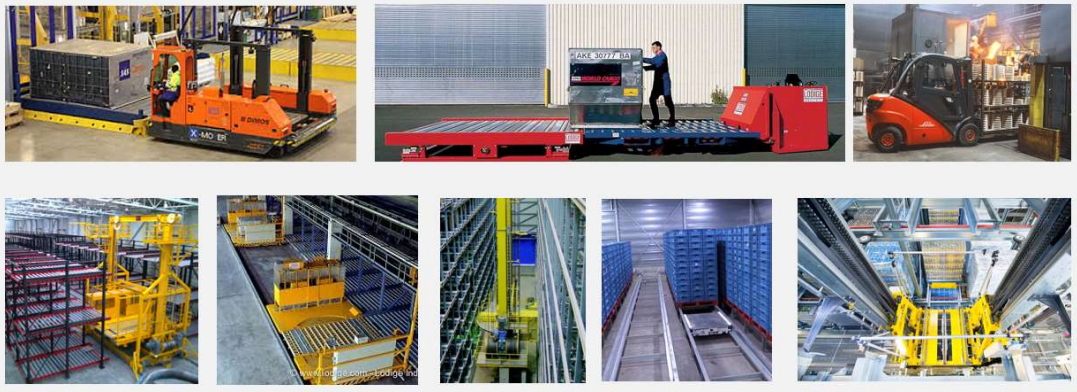
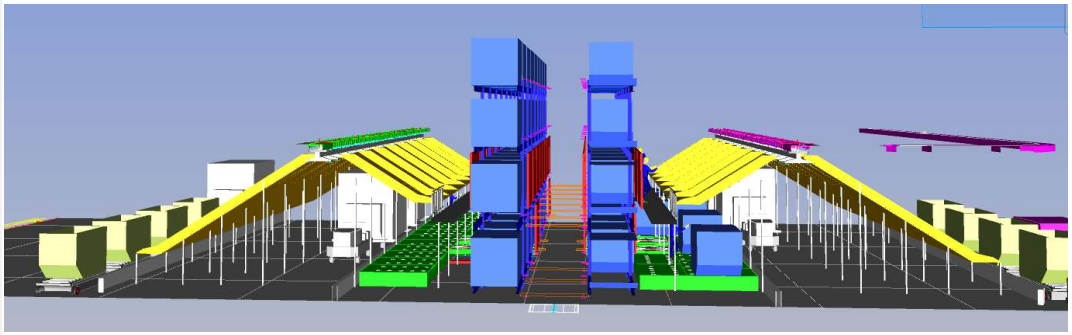
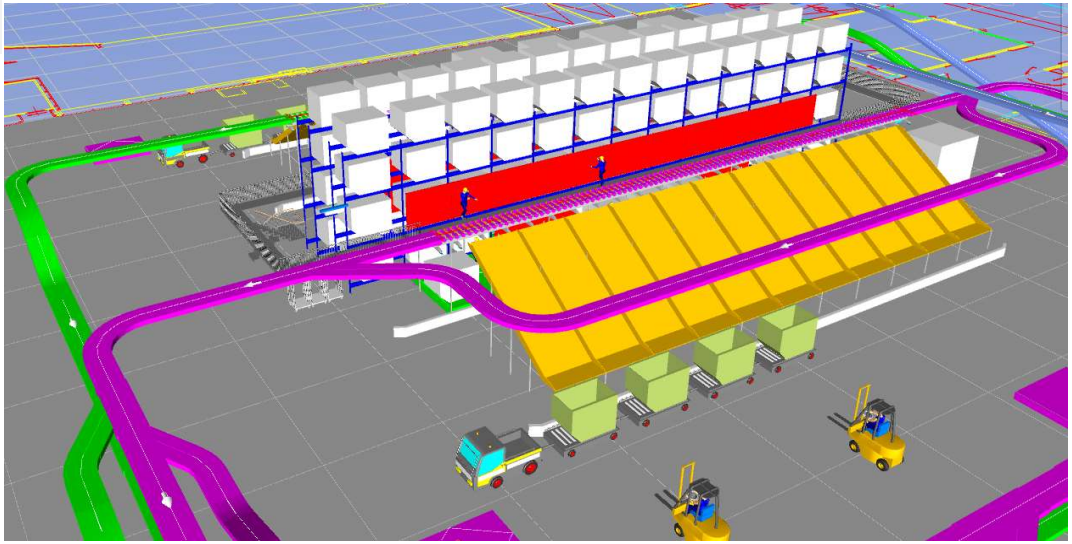
CASE 1 – Baggage, Mail and Cargo Facilities



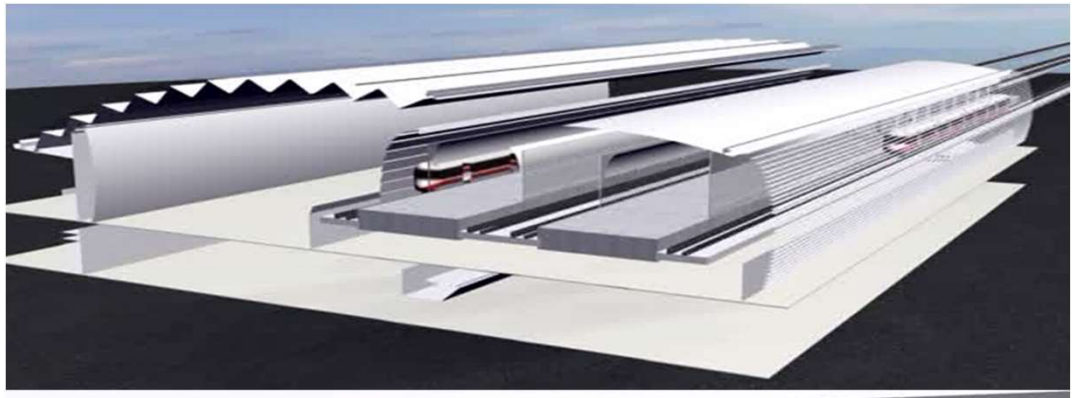


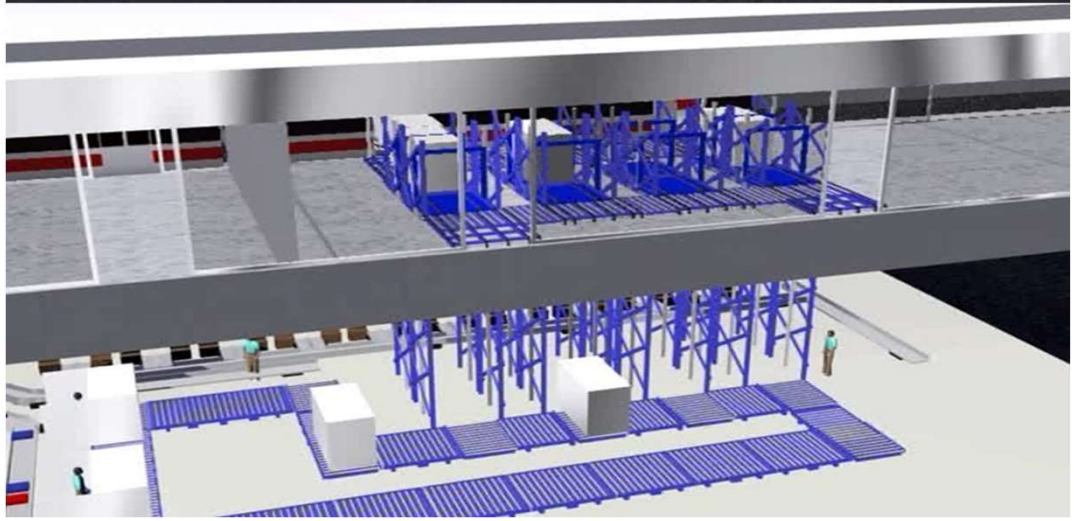


Integrated logistics for mid-sized airports:

- Capacity sharing between processing and handling operations
- Time efficient processing by combined logistics with different time windows
- Peak shaving by storage in intermediate or final receptacles (ULDs)
- Alternative carrier loading (passenger hold, or cargo carrier)

CASE 2 – Rail, PAX, Bags and Cargo Integration

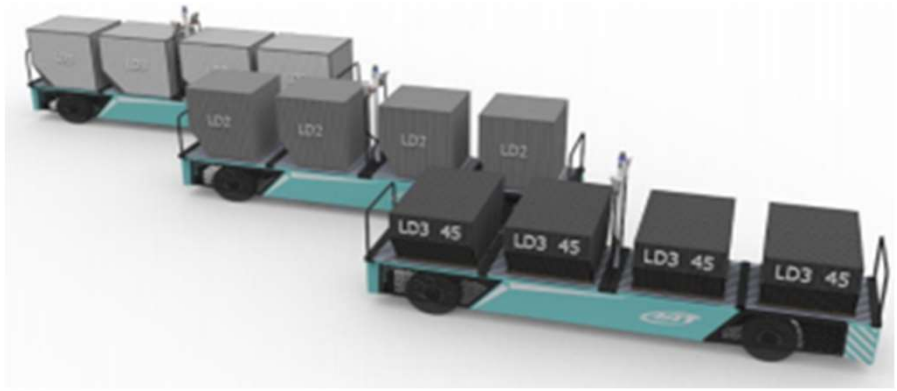


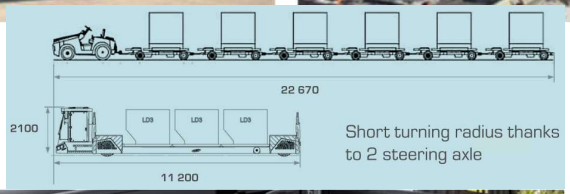


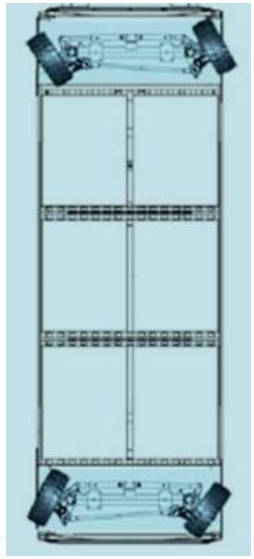
Integrated logistics between airports:

- Capacity sharing between Air, Rail and Road (Vans and Busses) transportation
- Quick connections between large urban areas and airports
- Smooth and automated handling of baggage, low volume cargo and other goods
- Convenience, capacity and safety – passengers travelling with less luggage

CASE 3 – Efficient and Automated Transport on Apron







Integrated logistics between airports:

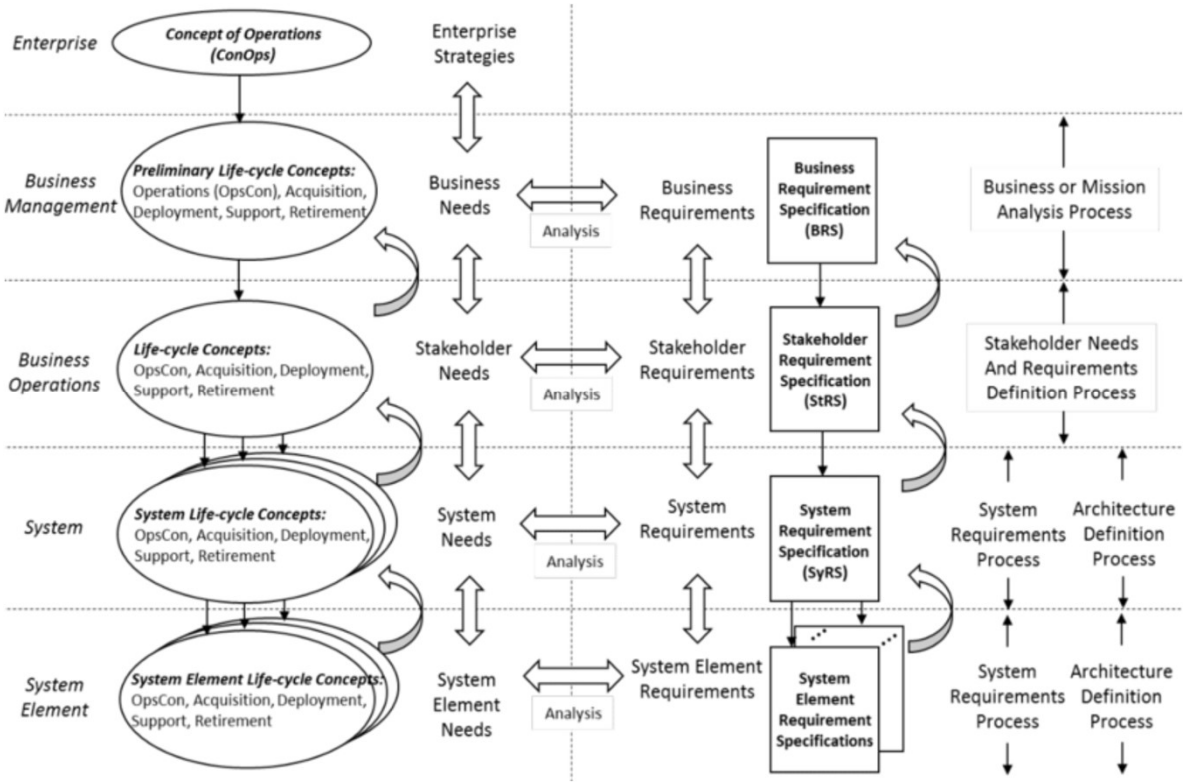
- Capacity sharing between Baggage, Cargo and transportation of other goods on the apron
- Faster and less footprint means significant less vehicles and shorter turn-around times
- Integrated and automated handling increases the efficiency and reduces the lost items
- Outdoor storage and buffering of LCs reduces expensive floorspace in terminals

DEVELOPMENT

Service-lines:

- Feasibility, business model and funding
- Sustainability evaluation
- Data capturing and preliminary planning
- Design and engineering
- Approval planning
- Implementation planning
- Tender preparation
- Participation in the award of contract
- Site supervision

Requirement Tiers:



EUROPEAN INNOVATIVE PARTNERSHIP (EIP)

The European Innovation Partnership (EIP) is a program initiated by the European Commission to stimulate innovation and address societal challenges through collaborative efforts involving various stakeholders:

1. Identification of Topics and Priorities
2. Call for Proposals to Various Solution Providers and System Integrators
3. Interaction and Consortium Formation based on Topics
4. Proposal Preparation together with various Stakeholders
5. Submission of Proposals by Consortia
6. Evaluation Process, Selection and Funding by Client
7. Project Implementation and / or Tendering

Throughout the project's duration, knowledge and outcomes are shared among consortium members and, often, with the wider public. This contributes to the overall goal of fostering innovation and addressing societal challenges.

DISCUSSION – CONTRADICTIONS

- **Real-time Data Sharing** the dynamic interplay of opposing forces. Integrated logistics fosters real-time data sharing among different airport functions, enabling quick decision-making and adaptability
- **Collaborative Ecosystem** – integrated logistics encourages a collaborative ecosystem (and operative competition) where various stakeholders work together to enhance efficiency
- Integrated logistics often relies on **Advanced Technologies** like IoT, and AI to optimize processes, but challenges may arise in terms of implementation **and Cybersecurity**
- Integrated logistics systems need to be **resilient and adaptable**, capable of handling disruptions while maintaining a **stable operational core**
- **Streamlining Operations** by combining various functions such as cargo handling, passenger services, and ground operations into a cohesive system
- Integrated logistics should optimize **human skills and expertise** while incorporating automation to augment **productivity**
- **Cost-Benefit** – innovations in integrated logistics require a constant evaluation of costs and benefits. The dialectics involve optimizing investment in technology and infrastructure to achieve long-term financial viability

DISCUSSION – CHALLENGES & RESISTANCE

- **Legacy** Systems and Existing Infrastructure
- Change Management Challenges, **Cultural Resistance** and Organizational Silos
- Financial Investments and **Budget Constraints**
- Lack of **Technological Expertise**
- Operational **Disruptions** and Perceived Reliability
- Regulatory **Compliance** Challenges
- Vendor **Lock-In Concerns** – hesitant to commit to integrated systems that limit future flexibility and choice
- Perceived **Loss of Control** – fear of dependency on external systems can be a barrier.
- Security and Privacy Concerns – stakeholders may not be confident in the ability to **protect sensitive data**
- Perceived Incompatibility with Unique Airport Requirements – stakeholders feel are incompatible with standardized integrated solutions, leading to resistance in **adopting a one-size-fits-all approach.**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